MERRITT HAWKINS
an AMN Healthcare company

White Paper Series

Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

Physician Supply Considerations: The Emerging Shortage of Medical Specialists

A resource provided by Merritt Hawkins, the nation's leading physician search and consulting firm and a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions company in the United States.

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Introduction

Merritt Hawkins is the nation's leading physician search and consulting firm and is a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions organization in the United States.

Merritt Hawkins produces a continuing series of surveys, white papers, books, speaking presentations and additional thought leadership resources that examine trends in physician supply and demand, physician practice patterns, physician compensation and related topics.

In this white paper, we review the trends and implications of a growing shortage of surgical, diagnostic, internal medicine and other medical specialists and sub-specialists in the U.S.

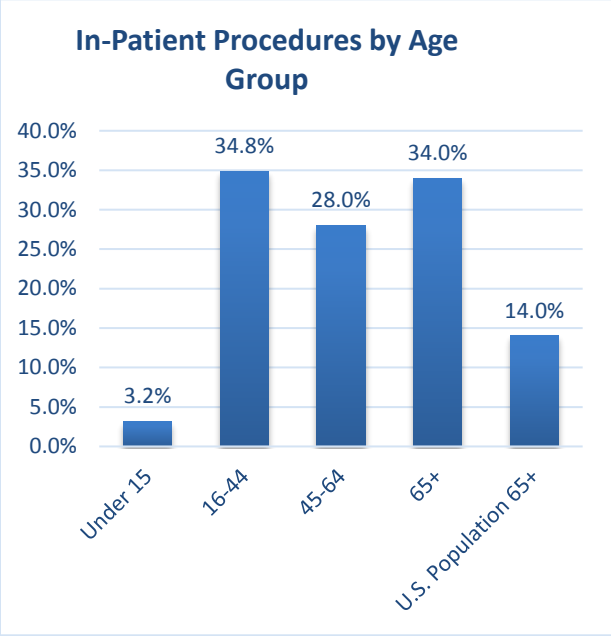
Shortages Not Confined to Primary Care

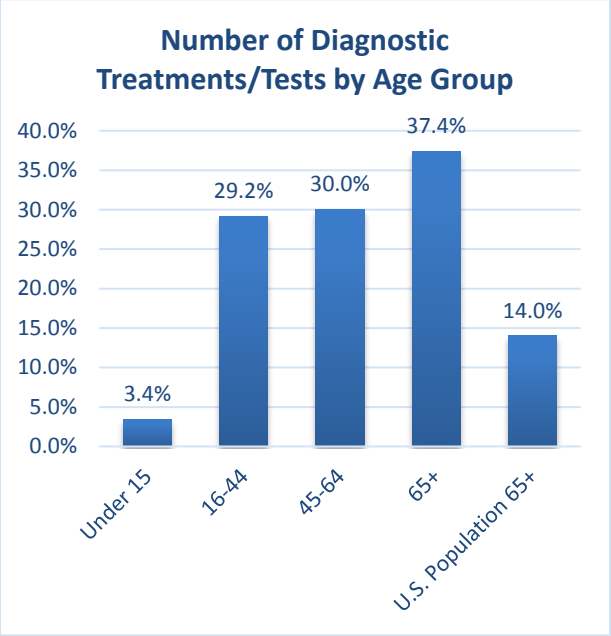
When considering physician supply in the United States, analysts and academics are near unanimous in their projection of current and growing doctor shortages in the area of primary care (defined in this white paper as family medicine, general internal medicine, and pediatrics).

What is less commonly conceded is that shortages of medical specialists also are challenging the ability of the U.S. healthcare system to provide patients with timely, appropriate care. Factors driving the demand for medical specialists and the available supply are examined below:

Patient Demographics Drive Demand

Approximately 75 million baby boomers began turning 65 in 2011, at a pace of some 10,000 per day. According to the CDC, patients 65 or older visit physicians at three times the rate of those 30 or younger. In addition, patients 65 and older account for a disproportionate number of inpatient services and diagnostic tests (see graphs below).





Source: Centers for Disease Control and Prevention

As the graphs show, seniors represent only 14% of the population but generate 34% of inpatient services and 37.4% of diagnostic treatments and tests. Many inpatients, who typically have acute medical problems, receive care from medical specialists trained to deal with serious medical conditions. Medical specialist also order a wide variety of tests and treatments and monitor and evaluate their results. The rapid growth of the senior population will accelerate the need for specialists to take care of ailing or failing bones, organ systems and psyches.

Some states have relatively older populations, but as the numbers below indicate, at least 10 percent of nearly each state's population is 65 or older, suggesting demand for specialists is likely to increase nationwide rather than regionally:

State	Percent of Population 65 or Older
Florida	17.3
West Virginia	16.0
Maine	15.9
Pennsylvania	15.4
Iowa	14.9
Montana	14.8
Vermont	14.6
North Dakota	14.5
Rhode Island	14.4
Arkansas	14.4
Delaware	14.4
Hawaii	14.3
South Dakota	14.3
Connecticut	14.2
Ohio	14.1
Missouri	14.0
Oregon	13.9
Arizona	13.8
Massachusetts	13.8
Michigan	13.8
Alabama	13.8
Wisconsin	13.7
South Carolina	13.7
New Hampshire	13.5
New York	13.5
Oklahoma	13.5
Nebraska	13.5
New Jersey	13.5
Tennessee	13.4
Kentucky	13.3
New Mexico	13.2
Kansas	13.2
Indiana	13.0
North Carolina	12.9
Minnesota	12.9

Mississippi	12.8
Illinois	12.5
Wyoming	12.4
Idaho	12.4
Washington	12.3
Louisiana	12.3
Maryland	12.3
Virginia	12.2
Nevada	12.0
California	11.4
Colorado	10.9
Georgia	10.7
Texas	10.3
Utah	9.0
Alaska	7.7

Source: United States Census Bureau

It is largely specialists such as cardiologists, orthopedic surgeons, neurologists, rheumatologists, vascular surgeons, and many others who care for the declining health and organ systems of elderly patients and a growing number will be needed as the population ages. Population growth is a second demographic factor to be considered. According to the U.S. Census Bureau, approximately 50 million people will be added to the nation's population in the years 2000 to 2020, accelerating demand for both primary care and specialist doctors. By 2040, the population is expected to reach 383 million, according to demographic experts at the University of Virginia.

In addition to population demographics, demand for specialists also will be driven by an increasing incidence of chronic diseases such as diabetes, obesity and other lifestyle and poverty related health conditions.

Specialist Supply Considerations

As demand for medical specialists increases, supply is likely to remain inhibited due in part to the 1997 cap Congress placed on graduate medical education funding through the Centers for Medicare and Medicaid Services (CMS). Largely because of this cap, residency training positions in the last 20 years have not kept pace with population growth or aging, nor have they kept pace with a 30% increase in medical school enrollment. As a consequence, a growing number of medical school graduates, including U.S. allopathic graduates, are unable to match to residency programs. Multiple bills have been introduced in Congress that would lift the cap and increase residency positions, but none have gained traction.

Efforts to increase the supply of physicians generally have been focused on primary care rather than medical specialties, and there is a prevailing notion in some policy making circles that the number of specialists should not be increased. A policy perspective prejudicial to the training of additional medical specialists is likely to remain a serious impediment to growing the supply of specialist physicians (see the discussion below on The Impact of Care Management/ACOs).

The supply of specialists also is likely to be significantly reduced due to the aging of the physician workforce, as is discussed below.

The Aging Physician Workforce

Forty-three percent of physicians in the U.S. are 55 years old or older, and a wave of physician retirements is imminent. Specialist physicians are, in general, older on average than are primary care physicians, as the numbers below indicate, and they will be retiring in proportionately higher numbers.

Specialties	***Percent of Physicians 55 or Older***
Pulmonology	73%
Psychiatry	60%
Cardiology (Non-Inv.)	54%
Orthopedic Surgery	52%
Urology	48%
Ophthalmology	48%
General Surgery	48%
Gastroenterology	45%
Anesthesiology	44%

Primary Care	***Percent of Physicians 55 or Older***
Internal Medicine	40%
Family Practice	38%
Pediatrics	38%

Source: AMA Physician Master File

Due in part to these physician and patient demographic trends, multiple medical specialty societies have released projections of shortages in their specialty areas. Societies governing the following specialties have released such reports:

- Allergy and Immunology
- Anesthesia
- Cardiology
- Child psychiatry
- Critical Care
- Dermatology
- Emergency Medicine
- Endocrinology
- Gastroenterology
- General Surgery
- Geriatric Medicine
- Medical Genetics
- Neurosurgery
- Neurology
- Oncology
- Pediatric Subspecialties
- Psychiatry
- Rheumatology
- Thoracic Surgery

Source: Recent Studies and Reports on Physician Shortages in the U.S. Association of American Medical Colleges. 2011

The Association of American Medical Colleges (AAMC) in 2018 projected a deficit of up to 121,300 physicians in the U.S. by 2030. While this projection includes a deficit of up to 49,000 primary care physicians, **it should be noted the AAMC projects an even larger deficit of up to 72,000 specialist physicians.**

Physician Recruiting and Physician Capacity Factors

Merritt Hawkins tracks the physician recruiting assignments it conducts each year by specialty. Specialists, including psychiatrists, emergency medicine physicians, neurologists, general surgeons, orthopedic surgeons, gastroenterologists and others continue to be among our most requested recruiting assignments.

Twenty-seven percent of our recruiting assignments in the 12-month period from April 1, 2016 to March 31, 2017 were for primary care physicians (family physicians, internists, and pediatricians), down from 33% the prior year, while the remaining 73% were for specialty physicians or advanced practitioners. In the 12-month period from April 1, 2017 to March 31, 2018, 26% of our recruiting assignments were for primary care physicians, while 74% were for specialists.

Though there are many job openings for primary care physicians, **job openings for medical specialists per**

capita can be greater than for primary care physicians (see the discussion of pulmonology below).

In a 2016 survey of over 17,000 physicians conducted by Merritt Hawkins on behalf of The Physicians Foundation (www.physiciansfoundation.org), it was found that over 81% of primary care doctors said they are now either at capacity or are overextended. Only about 19% said they had the time to see more patients. However, approximately 80% of specialist physicians also said they are at capacity or are overextended, while only 20% said they have the time to see more patients, indicating that, like primary care physicians, many specialists are at full capacity or at over-capacity

.

Physician Appointment Wait Times and Job Offers

In its *2017 Survey of Physician Appointment Wait Times and Physician Medicare and Medicaid Acceptance Rates*, Merritt Hawkins determined that new patient physician appointment wait times in 15 major metro areas for five different specialties increased by 30% from 2014 to 2017. The numbers below compare average 2017 and 2014 physician appointment wait times in various specialties.

Average Physician Appointment Wait Times, 2017 vs. 2014, For Five Specialties, in Days
(15 Large Metropolitan Markets)

	2017	***2014***
Cardiology	21.1	16.8
Dermatology	32.3	28.8
OB/GYN	26.4	17.3
Orthopedic Surgery	11.4	9.9
Family Medicine	29.3	19.5

Source: Merritt Hawkins 2017 Survey of Physician Appointment Wait Times

The 2017 survey also measured for the first time new patient physician appointment wait times in 15 mid-sized metropolitan markets in which the number of medical specialists per capita typically is less than in large metro areas. Wait times were longer in these areas (see below):

Average Physician Appointment Wait Times, 2017, For Five Specialties, in Days
(15 Mid-Sized Metropolitan Markets)

	2017
Cardiology	32.3
Dermatology	35.1
OB/GYN	32.1
Orthopedic Surgery	15.0
Family Medicine	54.3

Source: Merritt Hawkins 2017 Survey of Physician Appointment Wait Times

While physician appointment wait times are longest in primary care (family medicine) they are extensive and growing in medical specialties as well, signaling an imbalance between the supply of specialist physicians and demand for their services.

It should be noted that patient appointment wait times are growing even in large urban areas that have a relatively high number of physician per capita, and are on average longer in smaller communities with comparatively few physician per capita. **This trend suggests that shortages of both primary care and specialist physicians are not confined only to traditionally underserved rural areas but also are present in large and mid-sized cities.**

An additional Merritt Hawkins' survey, the *2017 Survey of Final-Year Medical Residents*, tracks the number of recruiting job offers physicians receive during their residency training. Fifty-five percent of primary care physicians surveyed indicated they had received 100 or more job solicitations during their training. While primary care residents received the most recruiting offers, 46% of specialist physicians received 100 or more recruiting offers during their training, while 64% received 50 or more recruiting offers. The number of job solicitations medical residents receive (both primary care and specialists) was higher in 2017 than in any other year since Merritt Hawkins first conducted the survey in 1991.

The Impact of Team-Based Care

Employment of the team-based model of care, particularly the increased use of physician assistants (PAs) and nurse practitioners (NPs), is likely to mitigate the shortage of both primary care and specialist physicians. It is largely the growing use of PAs and NPs that caused the Association of American Medical Colleges (AAMC) to downgrade its projections of a physician shortage. In previous projections, the AAMC forecast a shortage of up to 130,000 physicians, but revised that projection to 121,300 too few physicians by 2030 assuming PAs and NPs would absorb an increased volume of care previously handled by physicians (*The Complexities of Physician Supply and Demand, Projections for 2015 to 2030. April 2018*.

However, even practicing to the top of their training, PAs and NPs are not a substitute for primary care or specialist physicians. In the case of specialty care, PAs and NPs can assist on procedures and with patient management and education, but are not trained to perform complex surgeries and other procedures that only can be handled by specialists. The advance of medical technology and treatments into even more complexity and narrower areas of concentration will create a corresponding need for medical specialists.

Broadly speaking, there are no areas of advanced endeavor, whether information technology, aviation, engineering or many others, where the trend is toward more generalization and less complexity. All of these fields, particularly medicine, are becoming more technical and require more specialization and more specialists, not fewer.

Within medicine, primary care itself is becoming more complex, as primary care physicians must coordinate the care of patients with multiple, chronic conditions, leaving less complex duties to other members of the clinical team. For this reason, it has been suggested that many primary care physicians will evolve into "complexivists" managing a growing number of elderly patients with complex needs and those with various life-style related complications (*5 Practices That Can Help Health Systems Build Improved Relations With Doctors. Hospitals & Health Networks. May 16, 2016*).

The arc in society and medicine is clearly toward specialization. The notion that generalist providers or those with training below the physician threshold will eliminate the need for more medical specialists is misguided.

The Impact of Care Management/ACOs

It has been argued, primarily by researchers affiliated with the Dartmouth Atlas of Health Care, that approximately 30 percent of health care spending is waste and can be linked to over-doctoring, particularly by specialists. Its researchers conclude that "Increasing the supply of physicians will make our health system worse, not better." (www.dartmouthatlas.org/keyissues/issue.aspx?con=2940).

Dartmouth and others have proposed that new models of care delivery emphasizing provider integration, prevention, population health management, and care coordination will inhibit waste and improve outcomes and efficiency. This model is being put into effect through Accountable Care Organizations (ACOs), hundreds of which are providing care to Medicare and other patient populations nationwide.

Healthcare delivery systems more focused on prevention and care management may reduce utilization of specialty services at some point on the patient's continuum of care, but these management techniques cannot reverse the inevitable decline of the human body. Eventually, organs, bones and tissues wear out and require the expertise of specialists to repair and to treat.

Indeed, it can be asserted that the healthcare system's success in prolonging life contributes to the need for additional specialists. There are over 15 million cancer survivors in the U.S. today who will need the continued attention of oncologists and other specialists, and the same point can be made of survivors of heart attacks, strokes and other conditions that in the past were frequently fatal.

It also should be noted that to date, ACOs have not achieved anywhere near a 30% increase in efficiency. As the late Richard Cooper, M.D. indicated in his book Poverty and the Myths of Health Care Reform, if waste and inefficiency are responsible for 30% of health care spending, why can't those who have organized themselves around being more efficient achieve meaningful savings?

Tellingly, the Dartmouth-Hitchcock Medical Center itself pulled out of Medicare's Pioneer ACO initiative, losing

money on the initiative, which requires participating hospitals and doctors to repay Medicare for failing to meet performance targets on quality and savings (*Dartmouth-Hitchcock exits Medicare's Pioneer ACO program. Modern Healthcare. October 20, 2015).* A key proponent of the ACO model was not able to make it work.

This is not to suggest that innovative delivery systems that promote integration and prevention are not a good idea. They represent progress and are clearly the wave of the future. However, it is misguided to believe that the health care system can manage its way out of demographic, biological, technical and societal trends that are driving the need for more medical specialists.

Following is a review of supply and demand trends in several select medical specialties.

Psychiatry

In March, 2017, the National Council of Behavioral Health (NCBH) released a report compiled by a 27-member panel of experts drawn from providers, payers, government agencies and psychiatric associations. The report indicates there is a national shortage of psychiatrists that is about to spiral out of control, with 77% of U.S. counties reporting a severe psychiatrist shortage.

Joseph Parks, MD, medical director of the NCBH, was quoted as follows:

> *"Two-thirds of primary care physicians report that they have trouble getting psychiatrist services for their patients. So, they go to the emergency rooms. There has been a 42% increase in the number of patients going to the emergency room for psychiatric services in the past three years, but most of them are not staffed with psychiatrists. They try to get into an inpatient bed, but hospitals have been closing their psychiatric units because they can't find psychiatrists to hire and staff to run them. It is truly becoming a crisis." (HealthLeaders, March 30, 2017).*

In June, 2016 it was reported that for the first time the largest share of healthcare spending in the U.S. is on mental health disorders. An estimated $201 billion dollars was spent on mental disorders in the U.S. in 2013, the most recent year data is available, followed by heart disease, trauma, cancer and pulmonary conditions (*HealthLeaders, June 14, 2016*).

Approximately one in five adults in the U.S (43.8 million people, or 18.5% of the population) experience mental illness in a given year, with only 41% receiving mental health services. Among adults with a serious mental illnesses, just 62.9% received health services in the past year, according to the National Alliance on Mental Illness, while nearly one in 20 adults in America -- or 13.6 million people -- live with a serious mental illness. The mental health challenges facing the VA system have been widely noted as they struggle to cope with high incidences of post-traumatic stress syndrome and high suicide rates among veterans.

In a particularly telling statistic, emergency department visits for suicidal thoughts more than doubled during a recent seven year period according to a 2017 an Agency for Health Research and Quality (AHRQ) statistical brief *(HealthLeaders, March 3, 2017)*.

In some areas, primary care physicians attempt to address burgeoning demand for mental health services, but a report by the Commonwealth Fund indicates that more than 8 in 10 family doctors in the US say they are not adequately prepared to care for severely mentally ill patients. According to the report, just 16 percent of doctors said their offices had the capacity to care for those with serious mental illnesses, the lowest of any developed country besides Sweden (*The Hill, December 8, 2015*).

The supply of psychiatrists, already constrained, is soon going to diminish significantly. There currently are some 30,000 psychiatrists in active patient care in the U.S., 60% of whom are 55 years old or older, with many set to retire.

As Merritt Hawkins has consistently observed, **the shortage of psychiatrists is an escalating crisis of more severity than shortages faced in virtually any other medical specialty**. With many psychiatrists aging out of the profession, and with a preference among psychiatrists for outpatient practice settings, it is becoming increasingly difficult to recruit to inpatient settings.

Because psychiatric disorders are so frequently misdiagnosed, patients often require extensive time with psychiatrists when their conditions eventually are diagnosed correctly, further increasing demand. For additional information on the shortage of psychiatrists see Merritt Hawkins' white paper *Psychiatry: The Silent Shortage.*

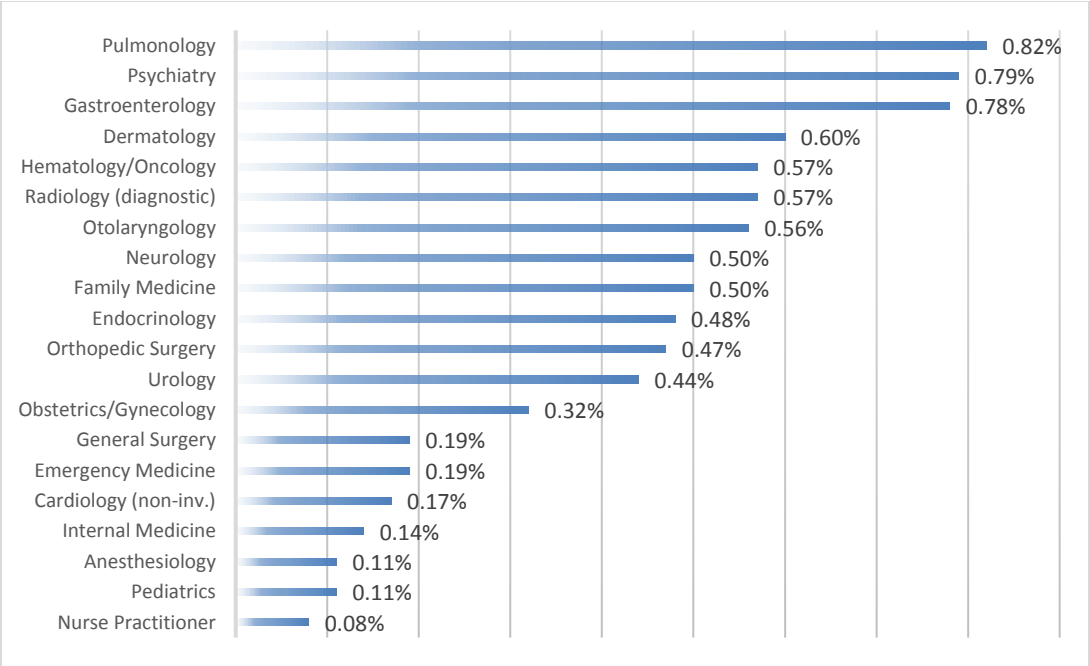
Pulmonology

It is to be expected that specialties that have a comparatively high number of practicing physicians, such as family medicine and internal medicine, will generate a comparatively high number of job openings of the kind that Merritt Hawkins and other search firms seek to fill. But how does the picture look if specialties are ranked by number of job openings as a percent of all active physicians in a given specialty (or by what Merritt Hawkins calls "absolute demand?").

The chart below ranks demand for particular types of physicians in this manner.

Merritt Hawkins Top Search Assignments as a Percent of all Physicians in Various Specialties

(Patient Care Only)



Source: Merritt Hawkins 2018 Review of Physicians and Advanced Practitioner Recruiting Incentives

Considered this way, demand for specialties such as pulmonology, gastroenterology, and neurology can be viewed as being particularly high, while some specialties, such as family medicine and psychiatry, are in high demand as ranked by both number of job openings Merritt Hawkins seeks to fill and by job openings as a percent of all physicians in their respective specialties.

As calculated by "absolute demand," pulmonologists are the most in-demand type of physician as ranked in Merritt Hawkins' *2018 Review of Physician Recruiting Incentives*. Demand for pulmonologists is driven by aging patient demographics and by the continued rise of chronic obstructive pulmonary disorder (COPD). Over 11 million Americans have been diagnosed with COPD and millions more may have it but do not know it. COPD now is the third leading cause of death in the U.S. after heart disease and cancer, according to the American Lung Association.

The chart below indicates COPD prevalence in various states.

COPD Prevalence in Adults by State (2015)

Highest Prevalence		Lowest Prevalence	
West Virginia	12.1%	Colorado	3.8%
Kentucky	11.5%	Utah	3.8%
Tennessee	9.9%	Minnesota	4.0%
Alabama	9.6%	North Dakota	4.3%
Illinois	8.3%	Connecticut	4.7%

Source: American Lung Association

A shortage of pulmonologists is likely to become particularly acute given that 73 percent of pulmonologists are 55 or older. According to the Health Services and Resources Administration (HRSA) there will be a deficit of 1,400 pulmonologists nationally by 2025 (*HRSA, Regional Projections of Supply and Demand for Internal Medicine Subspecialty Practitioners. December, 2016).*

Obstetrics/Gynecology

Because they provide medical services to women, rather than to all patients, and are trained in surgical techniques, Merritt Hawkins considers obstetricians/gynecologists to be specialists rather than primary care physicians, as they are sometimes characterized.

Demand for obstetrics/gynecology is driven by birth rates as well as by population growth among females. Nearly half the counties in the U.S. do not have a single Ob/Gyn, while 56 percent do not have a single nurse midwife, according to the American College of Nurse-Midwives.

The American Congress of Obstetricians and Gynecologists (ACOG) reports that the number of residents going into Ob/Gyn has remained virtually the same since 1980 at about 1,205. ACOG projects there will be 6,000 to 8,800 too few Ob/Gyns by 2020 as the number of women in the U.S. is expected to climb by 18% between 2010 and 2030 (*Columbus Dispatch, August 28, 2016*). The majority of Ob/Gyns who are 55 or older are men. However, about 4 in 5 first year Ob/Gyns are women, which tends to reduce overall FTEs as many young female physicians are in their child bearing years and require flexible schedules.

However, tt should be noted that both male and female Ob/Gyns today express interest in a “controllable lifestyle” and are less inclined to be on call, giving rise to the use of “laborists” whose sole function is to attend deliveries in the hospital. In addition, a growing number of Ob/Gyns are entering subspecialties such as gynecologic oncology, reproductive endocrinology and infertility, reducing the number available for routine care and deliveries. While seven percent of Ob/Gyn residents entered a subspecialty in 2000, 19.5% did so in by 2012 (*Columbus Dispatch, August 28, 2016).*

Based on these trends, Ob/Gyn remains among Merritt Hawkins' top ten most requested recruiting assignments and the specialty is likely to be in strong demand and short supply for the foreseeable future.

Emergency Medicine

The number of patient visits to hospital emergency rooms increased to over 141 million in 2014, a new record high according to the CDC.

As the number of ED visits increases and ED wait times grow longer, more emergency medicine physicians will be needed to staff hospitals and other healthcare facilities. Researchers at Massachusetts General Hospital assessed the emergency medicine workforce and concluded that the United States has 55% of what is needed to staff one board-certified EM physician in each of its emergency departments 24 hours a day (*Academic Emergency Medicine, September 2008*).

Additionally, even if all current board-certified emergency medicine physicians remained in the field, it would take 14 years before all EDs would have the number of emergency medicine physicians that patient volume requires, according to Massachusetts General Hospital researchers. That is unlikely to occur as nearly 30% of emergency medicine physicians are nearing retirement (over 55 years of age). Also, 52% of emergency medicine physicians have reported feelings of burnout in their careers (*Medscape, January 2015*). These trends will only further escalate shortages in a specialty where the impact of shortages is relatively more acute, as emergency medicine physicians cannot book patients out weeks or months in advance as can other types of doctors.

With a growing shortage and ever-increasing ED utilization, demand for physicians who work in the ED, particularly for physicians board-certified in emergency medicine, remains robust. According to Merritt Hawkins' *2017 Review of Physician and Advanced Practitioner Recruiting Incentives*, emergency medicine was the firm's 7th most requested search in 2016/17. Additionally, the number of searches conducted by Merritt Hawkins for emergency medicine physicians increased by 12.5% over 2016.

Neurology

In April, 2013 researchers at the American Academy of Neurology published an article in the journal *Neurology* examining supply and demand trends in the specialty.

The study found that the demand for neurologists will grow faster than the supply, and that there was an 11% deficit of neurologists at the time the study was published. By 2025, the study projected that the deficit will

grow to 19%. The study found that the estimated workforce of 16,366 U.S. neurologists is projected to increase to 18,060 by 2025, while demand for neurologists is projected to increase from about 18,180 in 2012 to 21,440 *(Study: U.S. Facing a Neurology Shortage. Science Daily. April 17, 2013*).

Patient aging and the growing number of patients with neurological disorders such as Alzheimer's Disease will accelerate demand for neurologists, while supply will not keep pace.

Dermatology

Skin cancer is the most commonly diagnosed form on cancer in the U.S. and its incidence is expected to rise due to patient aging and lifestyle choices. There are approximately 10,845 dermatologists in the U.S. today, yet according to the American Academy of Dermatology (AAD), the nation needs 22,000 dermatologists to treat all those with skin issues in an appropriate amount of time *(Women's Health, October, 2017)*.

Cardiology

Cardiovascular disease (CVD) remains the leading cause of mortality in the United States and the world. CVD accounts for more than 17.3 million deaths globally per year, totaling more than $13.7 billion in direct and indirect healthcare expenditures and lost productivity. By 2030, over 40% of the U.S. population is projected to have CVD and the direct medical costs are projected to triple, approaching $1 trillion. (*J Am Coll Cardiology. October 11, 2016*).

While deaths from CVD have decreased in recent decades, "decreasing mortality is not synonymous with reduced prevalence of CVD. Between 2012 and 2030, the prevalence of heart failure is projected to increase 46%. Similarly, the prevalence of atrial fibrillation is expected to increase between two and four-fold (*J Am Coll Cardiology. October 11, 2016*).

The most significant factor influencing the demand for cardiologists is the growing burden of CVD in the U.S., where nearly one in three deaths result from CVD. More than 70% of adults in the U.S. have at least one of the following behaviors or conditions: smoking, excessive drinking, insufficient sleep, physical inactivity or obesity (America's Health Rankings, United Health Foundation), all of which can be triggering factors for CVD.

While demand factors for cardiologists remain strong, the supply of cardiologists remains limited. Over half of non-invasive cardiologists are 55 or older and, with residency slots held in check by the cap on GME funding, supply cannot be expected to increase as a growing number of cardiologists reach retirement age.

Distribution of cardiologists is another concern. When grouped by quartile, significant portions of the Midwest

and Western states have one-quarter to one-half the number of cardiologists per 100,000 patients who are 65 or older compared to population-dense regions (*J Am Coll Cardiology. October 11, 2016*). As a result of these trends, the Health Resources and Services Administration (HRSA) projects a deficit of 7,080 cardiologists by 2025 (*HRSA, Regional Projections of Supply and Demand for Internal Medicine Subspecialty Practitioners. December, 2016*)

The number of searches for cardiologists Merritt Hawkins conducted doubled from 2016 to 2017 and held steady in 2018. Average starting salaries for invasive cardiologists reached $590,000 as tracked by Merritt Hawkins' *2018 Review of Physician Recruiting Incentives*, the highest number Merritt Hawkins has recorded and the highest for any specialty tracked in the 2018 Review and a further sign of demand for this specialty.

Vascular Surgery

There are only several thousand of these specialists in the United States who take care of the circulatory system, while there are some 100 million people in the U.S. who are at risk for vascular disease, according to the Society for Vascular Surgery. More specialists will be needed to address vascular conditions from strokes to varicose veins, but the supply of vascular surgeons remains limited. An article in the *Journal of Vascular Surgery* indicates there will be an 11.6% deficit of vascular surgeons by 2030 (see https://www.ncbi.nlm.nih.gov/pubmed/19703756)

Additional Specialties

Using the metric of "absolute demand" referenced above indicates that a number of other specialties also are in high demand and that shortages are not limited to primary care, though that is the area that tends to be the focus of policy maker and public attention.

The following data points underscore why medical specialists remain in high demand, even though new delivery systems such as ACOs, which focus on prevention and appropriate resource utilization rather than volume of tests and procedures, are designed to inhibit the use of specialty services:

- As of January, 2016, there were an estimated 15.5 million cancer survivors in the U.S. comprising 4.8% of the population
- This number is projected to increase by 31% to 20.3 million by 2026
- Over the next decade, the number of cancer patients who have lived 5 years or more after their cancer diagnosis is expected to increase by 35% to 14 million (*National Cancer Institute)*
- 5.5 million people in U.S. have been diagnosed with Alzheimer's
- This number is expected to increase to 16 million by 2050 (*Alzheimer's Association*)
- Each year, 5.4 million cases of non-melanoma skin cancer are detected
- More new cases of skin cancer are detected every year than the combined cases of breast, prostate,

lung and colon cancer

- Approximately 87,110 cases of invasive melanoma will be diagnosed in 2017 (*Skin Cancer Foundation)*
- The number of total hip replacements among inpatients 45 and older increased from 2000 to 2010, from 138,700 to 310,800 and from a rate of 142.2 per 100,000 people to 257.0 per 100,000 people while demand for knee arthroplasties will jump by 673% by 2030 (*Centers for Disease Control and Prevention/AAMC).*

The chart below shows projected shortages in various internal medicine subspecialties as projected by HRSA:

National Estimates of Physician Supply, Demand and Deficits/Internal Medicine Subspecialties by 2025

Specialty	Supply	Demand	Deficit/2015
Allergy and Immunology	4,140	4,620	-480
Cardiology	28,560	35,460	-7,080
Dermatology	13,100	13,530	-430
Gastroenterology	15,540	17,170	-1,630
Hematology/Oncology	18,100	19,500	-1,400
Pulmonology	14,110	15,510	-1,400
Rheumatology	6,330	6,610	-280

Source: HRSA Regional Projections of Supply and Demand for Internal Medicine Subspecialty Practitioners. December, 2016.

Conclusion

While the shortage of primary care physicians has been widely noted by healthcare policy experts and analysts, there is considerable evidence for a corresponding shortage of specialist physicians. Both types of doctors will be required to meet the needs of America's growing and aging population, and, accordingly, a growing number of both kinds should be added to the workforce.

About Merritt Hawkins

Established in 1987, Merritt Hawkins is the leading physician search and consulting firm in the United States and is a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions organization in the nation. Merritt Hawkins' provides physician and advanced practitioner recruiting services to hospitals, medical groups, community health centers, telehealth providers and many other types of entities nationwide.

The thought leader in our industry, Merritt Hawkins produces a series of surveys, white papers, books, and speaking presentations internally and also produces research and thought leadership for third parties. Organizations for which Merritt Hawkins has completed research and analysis projects include **The Physicians Foundation, the Indian Health Service, Trinity University, the American Academy of Physician Assistants, the Association of Academic Surgical Administrators, and the North Texas Regional Extension Center.**

This is one in a series of Merritt Hawkins' white papers examining a variety of topics directly or indirectly affecting the recruitment and retention of physicians and advanced practice professionals, including physician assistants (PAs) and nurse practitioner (NPs).

Additional Merritt Hawkins' white papers include:

- The Growing Use and Recruitment of Hospitalists
- Keys to Enhancing Physician/Hospital Relations and Reducing Turnover
- Rural Physician Recruiting Challenges and Solutions
- Psychiatry: "The Silent Shortage"
- Nurse Practitioners and Physician Assistants: Supply, Distribution, and Scope of Practice Considerations
- The Physician Shortage: Data Points and State Rankings
- RVU FAQ: Understanding RVU Compensation in Physician Employment Agreements
- The Economic Impact of Physicians
- Trends in Incentive-Based Physician Compensation

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